ATOMIC ENERGY newsletter®

A SERVICE FOR INDUSTRY BUSINESS ENGINEERING AND RESEARCH
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Dear Sir:

New and important areas of nuclear information are being made public by U.S., Great Britain and Canada with revision of the Tripartite Declassification Guide. The Guide, outgrowth of World War II nuclear cooperative effort of these nations, specifies category (secret, etc.) in which the three countries keep their nuclear data and statistics. Reactor data to become available (possibly by the middle of next year) will be that relating to technology of heavy water manufacture; separation of zirconium and hafnium; isotope separation by liquid thermal diffusion; radiation effects; chemical reprocessing of spent reactor fuels; mass spectrographs; fabrication of fuel elements; and raw materials production. (As first step, U.S. and Canada have made public statistics on uranium production and reserves; p. 3 this LETTER.)

Approximately $2 billion has been budgeted by the USAEC for its 1958 fiscal year spending, and next year the President will ask Congress for that amount in his Budget Message. Meanwhile, the USAEC's financial report for 1956, released last fortnight, showed total U.S. spending for atomic energy to be $15,202.6 billion, with USAEC equity being $8,322.8 billion of which $6.466 was in plant and equipment. Major part of the budget has been going for procurement and production of nuclear materials; for 1956, this accounted for more than half of the budget. (Other FINANCIAL NEWS, p. 5 this LETTER.)

Commercial operator for the U.S. Army's Ionizing Radiation Center is desired by the Army; Center will be located at Sharpe General Depot, Lathrop, Calif., where Quartermaster Corps' radiation food sterilization and preservation program will get full-scale test. Center will consist of food processing plant and electron accelerator, to be furnished by Army; and nuclear reactor to be supplied by USAEC. Interested bidders should get in touch with Commanding Off., QM Radiation Planning Agency, QM Res. & Dev. Comm., 2nd & T Sts., S.W., Wash., D.C. (Other BIDS ASKED, CONTRACTS AWARDED, p. 2 this LETTER.)

Sylvania-Corning Nuclear Corp., joint operation of Corning Glass and Sylvania Electric, will be located at Andover, Mass. Option on 150-acre site for the multi-million nuclear center has now been taken in that city by Sylvania Electric. Five buildings, with 15,000-sq. ft. of working space are planned for the center which will concentrate on development and production of nuclear fuel elements and components. (Other BUSINESS NEWS, p. 2 this LETTER.)

Work on first experimental nuclear power station in Czechoslovakia is planned for 1957. To be built with assistance from the Soviet Union, it is expected to start operation in 1960. Fuel will be enriched uranium with heavy water as moderator. Plant for production of heavy water will also be built, but process to be used has not yet been revealed. (Other NEWS FROM ABROAD, p.4 this LETTER.)

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ATOMIC ENERGY BUSINESS NEWS...

NUCLEAR REACTORS PLANNED:- Middle South Utilities, Inc., has asked a number of nuclear reactor builders to submit conceptual plans for a prototype of a nuclear reactor with a capacity of 20,000 electrical kilowatts. Firms asked to submit plans include General Nuclear Engineering Corp.; Atomics International div. of North American Aviation, Inc.; General Electric Co.; and Westinghouse Electric Corp. Middle South said it is interested in a nuclear power plant for its tri state territory of Arkansas, Louisiana, and Mississippi.

Daystrom, Inc., has applied for a USAEC license to build and operate a low-power reactor with a capacity of about one electrical kilowatt. The firm said that it intends to offer the reactor for sale to industries and universities..... Aerojet-General Nucleonics div. of General Tire & Rubber, has asked the USAEC for license to build and operate five 100 milliwatt research reactors, at its San Ramon, Calif. plant, which it intends to sell to licensed institutions.

An $8.5 million reactor facility, known as the Argonne boiling water reactor (ARBOR), is to be constructed by the USAEC at its national reactor testing station, Idaho Falls, Idaho. Staff of Argonne National Laboratory, Lemont, Ill., will handle the project; architect-engineer has not yet been selected. Planned operational date is 1959. Facility will be an extension of the work on boiling water reactors currently being conducted at Argonne.

BIDS ASKED, CONTRACTS AWARDED...in the nuclear field...

BIDS ASKED:- Plans and specifications covering approximately $2,285,000 in new construction at the national reactor testing station, Idaho Falls, Idaho, are now available to interested bidders. Four contracts are involved: (1) Under no. AT(10-1)-873, construction of a hot cell area at the aircraft nuclear propulsion area is involved; amount is approximately $500,000.00. (2) Under no. AT(10-1)-879, transmission lines and transformer stations are to be installed; amount involved is approximately $1.5 million. (3) Under no. AT(10-1)-886 is a railroad extension project, to cost approximately $250,000.00. (4) Under no. AT(10-1)-884, building modification in the materials reactor testing area is involved. Cost of job is estimated at $35,000.00..... In another job at this station, plans and specifications will be available Jan. 2, 1957 to furnish, fabricate and erect structural steel for the Argonne low power reactor; contract is no. AT(10-1)-888, with cost estimated at $80,000. (Inquiries concerning listed jobs should be made to USAEC, Idaho Falls, Idaho.)

CONTRACT INVITATIONS MADE:- Maritime Administration last fortnight asked some 16 firms to submit bids by Feb. 1st on constructing closed cycle gas turbine propulsion plants for its Liberty ship engine conversion program. All designs are to be adaptable to substitution of a nuclear reactor for oil-fired plant, and to test at 20,000 shaft HP. Firms invited are: Atomics International; Aerojet-General; Elliott Co.; American Turbine; Nordberg Manufacturing; Ingalls Shipbuilding; Allis-Chalmers; General Dynamics (Electric Boat div.); General Electric; Boeing Airplane; Chrysler Corp.; Studebaker-Packard; General Motors; Westinghouse Electric; Bethlehem Steel; Ford Instrument. (Meanwhile, Maritime Administration is surveying private shipyards preparatory to inviting bids early next year for construction of hull of the U.S.'s first nuclear powered merchant ship. Some six yards are considered qualified for the project, on which MA will spend $18 million. Negotiations are under way between USAEC and Bagcock & Wilcox for construction of the ship's nuclear power plant at estimated cost of $22.5 million.)

CONTRACTS AWARDED:- Contract for $1,248,000.00 has been awarded Haas-Haynie-Frandsen, Inc., Los Angeles, by General Dynamics Corp., for site development work and construction of the first of four buildings of the firm's San Diego, Calif. nuclear experimental laboratory, on Torrey Pines mesa in that city. Construction company was selected from seven proposals; work will be on cost-plus fixed-fee basis.

CONTRACT RENEWALS:- Radiation instrument research contracts have been renewed for three organizations, for one year, by the USAEC: Levinthal Electronic Products, Inc., Redwood City, Calif., with its contract on study of scintillation and other related properties of sodium iodide crystals ($27,429); University of Louisville, with its contract on synthesis and properties of organic scintillators ($9,665); and St. Procopius College, with its contract on special problems in nuclear instrumentation ($61,000).

NEW PRODUCTS, PROCESSES, INSTRUMENTS...for nuclear lab & plant...

NEW PRODUCTS FROM MANUFACTURERS:- Trade-named Leadolene is a specially formulated polyethylene lead filled thermoplastic compound. Suggested use is in radioactive shielding applications. Product has a composition of 95% lead by weight, and 5% polyethylene by weight, with a specific gravity of 7 gr./cc. Lead content of the material shields against beta and gamma rays; polyethylene assists in shielding against neutrons. --Telectro Industries Corp., Long Island City 1, N.Y.

High brightness safety signals and markers, using the radioisotope krypton-85 to excite treated phospher crystals to luminescence, are now offered commercially. Said to be visible at distances in excess of 500-yards, the sources are enclosed in hermetically-sealed, transparent capsules, claimed to be weather and tamper-proof. --U.S. Radium Corp., Morristown, N. J.

New monitoring film (Kodak personal monitoring film type 2) has high-sensitivity emulsion on one side of the film, and low-sensitivity emulsion on the other side. If the film comes out of processing a dense black, the high-sensitivity emulsion can be quickly removed and the density of the slow emulsion used to determine degree of exposure. --Eastman Kodak Co., Special Sensitized Prod. Div., Rochester 4, N.Y.

MANUFACTURERS' NEWS:- New bulletin describing characteristics and uses of three nuclear research reactors, offered for sale, is available from General Electric Apparatus Sales Div., Schenectady 5, N.Y. (Bulletin GEA 6326-B).

Price increases averaging 10% on its line of Van de Graaff particle accelerators have been established by High Voltage Engineering Corp., Cambridge, Mass.

In connection with its work in the nuclear field, Raytheon Manufacturing Co., Waltham, Mass., has made available new booklet, "Nuclear Reactor Data 2". Details on more than 140 nuclear reactors now in use or to be built by 20 nations are outlined.

IONIZING RADIATION NOTES:- National Committee on Radiation Protection has now recommended radiation exposure limits. (The Committee, of which Lauriston S. Taylor is chairman, is sponsored by the National Bureau of Standards.) For the population of the U.S., as a whole, the limit would be 10 million roentgens of man-made radiation, delivered to the reproductive organs, for every 1 million people from conception to age 30. This would mean an average limit of 10 roentgens per person. For nuclear plant workers, the limit would be set by a formula under which, at no age, would the total accumulated dose be more than the worker's age minus 18, multiplied by 5. Present limit is 0.3 r per week, or 15 r per year; new recommended limit is 5 r per year.

New non-destructive testing procedure has been developed by National Bureau of Standards, to determine size and position of pores in industrially produced electroplated coatings. Method, which involves photographing an electroplated specimen exposed to radiation, is said to be able to detect pits, voids and inclusions in the coating to the order of 0.001-in. in diameter.

RAW MATERIALS...prospecting, mining, marketing...

UNITED STATES:- First figures revealed by U.S. under new revision of Tripartite Declassification Guide (p. 1 this LETTER) are statistics on uranium production since July, 1955; prior figures remain classified. Twelve mills are now in operation in the U.S.: Anaconda Co., Bluewater, N.M., with daily capacity of 3,000 tons of ore per day; USAEC mill, Monticello, Utah, 600 tons; Climax Uranium, Grand Junction, Colo., 350 tons; Kerr-McGee Oil Industries, Shiprock, N.M., 500 tons; Mines Development, Inc., Edgemont, S.D., 300 tons; Rare Metals Corp., Tuba City, Ariz., 250 tons; Union Carbide Nuclear Co., Uravan, Colo., 850 tons; Union Carbide Nuclear Co., Rifle, Colo., 280 tons; Uranium Reduction Co., Moab, Utah, 1500 tons; Vanadium Corp. of America, Durango, Colo., 430 tons; Vanadium Corp. of America, Naturita, Colo., 350 tons; and Vitro Uranium Co., Salt Lake City, Utah, 550 tons. This is a total capacity of 8960 tons of ore per day.

An additional 8 new mills are under construction, with completion scheduled for 1957 or early 1958; they will have a total capacity of 4025 tons of ore per day.

Domestic ore reserves, on Nov. 1st, 1956, were 41 million for New Mexico; 7.5 million for Utah; 4.1 million for Colo.; 2.6 million for Arizona; 2.3 million for Wyoming; 1.5 million for Washington; and 1 million for other areas. Uranium oxide content of these ores varied from 0.18% for Washington, to 0.34% for Utah.

NEWS FROM ABROAD...in the atomic energy field...

GREAT BRITAIN:- Work will be started early next year on a 360,000 electrical kilowatt nuclear power plant to be erected at Hunterston, near Glasgow, Scotland. The project, with an estimated cost of $98 million, will be handled for the U. K. Atomic Energy Authority by General Electric Co. - Simon Carves atomic energy group, acting as prime contractors to the Authority. The new year will also see work starting on a nuclear power plant at Bradwell, Essex, with a capacity of 300,000 electrical kilowatts, while at Berkley, Gloucestershire, a 275,000 electrical kilowatt nuclear power plant will be constructed by the Associated Electric Industries-John Thompson Nuclear Energy Co. group.

Sub-contracts from firms handling nuclear power plant contracts, resulting in orders for equipment for such nuclear power stations, have been encouraging according to the chairman's report of the Heenen Group of industrial firms. Increased volume of business brought trading profits to £505,900 from £499,485 last year.

FRANCE:- New firm, the Compagnie D'Applications et de Recherches Atomiques, has been formed with headquarters at 45, Ave. Kleber, Paris. Capitalized at 100 million francs, some nine French industrial firms have organized this new firm which is headed by M. Henri Ziegler. Operations will be in all fields of nuclear energy.

NEW ZEALAND:- Government expenditures on Geothermal Development, Ltd., were £579,949 according to official sources. Geothermal Development was a joint undertaking of the UK and NZ governments to produce heavy water as a by-product of New Zealand's project for generating electricity by geothermal steam at North Island. When UK found that heavy water production would not be economically feasible, it withdrew from the project. Some of the total expenditure will be reimbursed to NZ by the U. K. Atomic Energy Authority, which had gone into it hoping to get heavy water for its nuclear projects in Great Britain.

NEW BOOKS & OTHER PUBLICATIONS...on nuclear subjects...

The Physics of Nuclear Reactors. Supplement no. 5, British Journal of Applied Physics. Proceedings of conference sponsored by the Institute in London, July 3-6, 1956. 112 pages. --Institute of Physics, 47 Belgrave Sq., London S.W. 1, Eng. (25s)

Safety Aspects of the Use of Nuclear Energy. Preprint of paper to be presented by C. R. Russell at Society of Automotive Engineers' annual meeting, Jan. 14-18, Detroit. --Soc. of Automotive Eng., 485 Lex. Ave., N.Y. 17, N.Y. (50¢)

Contracts awarded by USAEC to Electric Energy, Inc., and Ohio Valley Elec. Corp.; report of Comptroller General of U.S. 73 pages. No. Y4. At 7/2: EL 2/pt. 2, 3. (25¢).....Hydrogen. Bulletin no. 5 of USAEC. No. Y3. At 7:3/5. (15¢).....Thorium; no. I 28.37/a:T 392/954. (10¢). Zirconium & hafnium; no. I 28.37/a:Z 68/954. Preprints from minerals yearbook of Geological Survey. --Sup't. of Docs., Wash. 25, D.C.

The Commonwealth & Nuclear Development. New edition of Central Office of Information reference pamphlet includes agricultural applications of radioisotopes, summary of Medical Research Committee's report on effects of nuclear radiation, prospects for British firms in exporting research reactors and nuclear instruments, and complete list of nuclear reactors being built or planned in the UK. --H. M. Stationery Office, London, Eng. (3s 6d).

MEETINGS, COURSES, CONFERENCES...

CONFERENCES:- Office of Naval Research, and the Martin Co., Baltimore, will co-sponsor an educational colloquim on Radiation Effects on Materials, to be held at Johns Hopkins University, Baltimore, Mar. 27-29, 1957.

Second annual Industrial Nuclear Technology Conference will be held in Chicago, May 14-15, 1957. Sponsorship will be by Armour Research Foundation, Ill. Institute of Technology, and Nucleonics. Further information from: Leonard Reiffel, Armour Res. Foundation, 10 W. 35th St., Chicago 16, Ill.

COURSES:- Six universities will receive two year contracts from the USAEC under its program to double the number of nuclear reactor specialists trained each year at the Oak Ridge Institute of Reactor Technology. The universities will offer concentrated courses of study designed to develop specific proficiency in chemistry, mathematics, physics and engineering for students accepted for the Oak Ridge Institute. Universities selected from among 44 which submitted proposals are Carnegie Institute, Pittsburgh; Case Institute, Cleveland; Northwestern U., Evanston, Ill.; Univ. of Calif., Los Angeles; Univ. of Florida, Gainesville; and Union College, Schenectady, N.Y.

ATOMIC ENERGY FINANCIAL NEWS...

LOAN NEGOTIATED:- A $15 million loan has been negotiated by Power Reactor Development Co., with five New York banks, to help finance construction of its nuclear power plant at Lagoona Beach, Mich. PRDC is a group of 26 utility and industrial firms whose sole business is the development of atomic energy as an economic source of electric power. Loan is contingent on being guaranteed by the firms making up PRDC. Banks involved in the loan are: J.P. Morgan & Co., Inc., Bankers Trust Co.; Chase Manhattan National Bank; First National City Bank of New York; and City Bank Farmers Trust Co. Loan is to be repaid over a ten year period starting five years from now out of revenues derived from the plant. (PRDC's members have made commitments, toward balance of cost of project, of an additional $13.54 million which is expected to reach $23.54 million. Total cost of PRDC's facilities is expected to exceed $40 million.)

INTERIM FINANCING PLACED FOR URANIUM MINING OPERATION:- Interim financing has been arranged by Stanrock Uranium Mines to continue the company's present program, pending completion of senior financing. (Hugh Fulton, president of Stanrock, estimates $24.5 million in capital funds will be needed to build mining and milling facilities for the firm.) This interim financing, which was the sale by Stanrock to a group of $3 million of 5¼% first mortgage bonds, payable June 1, 1957, and 450,000 shares of common stock, gave a total of $3 million to the company. Group which took up these securities consisted of Hugh Fulton; Alfred A. Strelsin; Atlas Corp.; City Investing Co.; TriContinental Financial Corp.; Blyth & Co.; and Dominion Securities Corp. Basis for financing was Stanrock's contract, which it now has in hand, to sell approximately $95 million in uranium concentrates to Eldorado Mining & Refining, the Canadian government purchasing agency.

ATOMIC ENERGY PATENT & TRADE-MARK DIGEST...grants & applications...

PATENT GRANTS TO PRIVATE INDIVIDUALS AND/OR ORGANIZATIONS:- Method of treating phosphate rock to recover phosphorous, fluorine, calcium and uranium. U. S. Pat. No. 2,773,736 issued Dec. 11, 1956; assigned to Smith-Douglass Co., Inc., Norfolk, Va. (Application date: Aug. 8, 1952.) (Inventor: C. A. Hollingsworth.)

TRADE-MARK GRANTS:- Mark Vitro, issued May 24, 1924 to Vitro Manufacturing Co., Pittsburgh, has been published by Vitro Corp. of America, New York, successor corporation. Mark covers oxides of cobalt, chromium, etc., under Class 6 (chemicals and chemical compositions).

PATENT GRANTS TO GOVERNMENTAL ORGANIZATIONS:- Electrolytic process of salvaging uranium; concentrating uranium in solution. U. S. Pat. No. 2,773,820 issued Dec. 11, 1956; assigned to United States of America (USAEC). (Application date: Sept. 14, 1944.) (Inventor: R.Q. Boyer, S.B. Kilner.)

Safety device for nuclear reactor. U.S. Pat. No. 2,773,823 issued Dec. 11, 1956; assigned to United States of America (USAEC). (Application date: May 22, 1945.) (Inventor: J. J. Goett.)

Apparatus for recovery of uranium by electrodeposition. U.S. Pat. No. 2,773,825 issued Dec. 11, 1956; assigned to United States of America (USAEC). (Application date: Apr. 28, 1944.) (Inventor: F. A. Newcombe.)

Apparatus for indicating level of liquid in closed container. U. S. Pat. No. 2,773,386 issued Dec. 11, 1956; assigned to United States of America (USAEC). (Application date: Feb. 21, 1955.) (Inventor: E. O. Swickard, Jr.)

PATENT APPLICATIONS MADE:- Shut down mechanism for nuclear reactor. U. K. App. No. 23354/55, made by U. K. Atomic Energy Authority. (Inventor: G.E. Lockett.)

Separation of hydrogen and deuterium. U.K. App. No. 25695/55, made by U. K. Atomic Energy Authority. (Inventors: D.R. Augwood, T.A. Hall.)

Abrasion resistant curved and plane scintillation screens. U. K. App. No. 29957/55, made by U. K. Atomic Energy Authority. (Inventors: I. A. Mossop, F. G. Brightman.)

PATENT NOTES:- Basic Science Foundation, Inc., New York, has now applied to USAEC's patent compensation board for "award or compensation" for alleged use by the Commission of processes relating to enrichment of uranium as disclosed in pending classified patent applications.

Sincerely,

The Staff,
ATOMIC ENERGY NEWSLETTER

December 25th, 1956